HealthCatalyst®
ignite outcomes improvement

Analysis Reveals that Pharmacist-led Medication Therapy Management Reduces Total Cost of Care

Allina Health

HEALTHCARE ORGANIZATION

Accountable Care Organization

Integrated Delivery System

Value-based Healthcare Organization/Solutions

PRODUCTS

- Health Catalyst® Analytics Platform and broad suite of analytics applications

SERVICES

- Professional Services
- Installation Services

EXECUTIVE SUMMARY

Nearly half of all Americans use at least one prescription drug, and 11.9 percent take five or more prescription drugs, demonstrating that prescription medication use is widespread and increasingly complex.

With high prescription usage comes prevalent medication-related problems. More than 1.5 million preventable medication-related adverse events occur each year, costing more than $177 billion in medication-related morbidity and mortality.

To reduce medication-related adverse events, Allina Health, a non-profit health system, was considering expanding the involvement of pharmacists performing medication therapy management (MTM) to a group of Medicaid patients covered by a shared-risk contract. Prior to being able to make this decision and develop a comprehensive business plan, the health system wanted to better demonstrate the unique impact pharmacists were making on patient outcomes.

Allina Health leveraged its analytics platform and Health Catalyst professional services to perform a comprehensive analysis, which demonstrated a:

- $2,085 mean total cost of care reduction per patient in the six-month period after the first pharmacist MTM encounter; over $590,000 extrapolated out over 283 MTM patients.

- 12 percentage point reduction in hospital admissions per 1,000 members and a 10 percentage point reduction in emergency department visits per 1,000 members.

- Statistically significant decreases in average medication count.

> "The data derived from Allina Health showed the value, in a very strong way, of the pharmacist participating in the care team."
>
> Ann Byre, PharmD
> Vice President, Pharmacy Services
> Allina Health

PERVASIVE PRESCRIPTION USE

Among ACO NextGen Medicare cost insured patients, prescription medication use is commonplace and increasingly complex. Nearly half of all Americans use at least one prescription drug with 11.9 percent using five or more prescription drugs.[1] Also prevalent are medication-related problems. There are approximately 1.3 million emergency department (ED) visits each year due to adverse drug events, with about 350,000 patients requiring hospitalization for treatment.[2]

A not-for-profit health system, Allina Health cares for patients from beginning to end of life through its 12 hospitals, 65 clinics, 52 rehabilitation locations, 23 hospital-based clinics, 15 retail pharmacies, and two ambulatory care centers. It continually looks for ways to minimize medication-related adverse events and improve care outcomes.

UNDERSTANDING PHARMACIST IMPACT ON OUTCOMES

Allina Health's advanced care team, an integrated group of healthcare disciplines including social workers, registered nurses, care guides, and pharmacists, is focused on the coordination and care of patients with complex healthcare needs. The advanced care team pharmacists focus their efforts on patients who have recently been discharged from the hospital who are at high-risk for readmission, and patients with high ED utilization.

Pharmacists meet with patients and complete a comprehensive medication review. The intent of the pharmacists' review is to optimize drug therapy to improve the clinical outcomes in collaboration with the patient's provider. The pharmacists provide in-depth education to patients and their families and caregivers, helping to increase patient understanding and adherence.

While Allina Health had completed a comprehensive analysis on the impact of the advanced care team, demonstrating reductions in the total cost of care, reduced hospital admissions, and reduced ED visits, it had not yet isolated the role of the pharmacist and evaluated their contribution to outcomes.

Allina Health was considering expanding the involvement of pharmacists performing MTM to a group of Medicaid patients covered by a shared-risk contract. Prior to making this decision and developing a comprehensive business plan, pharmacy leaders at

> "Pharmacists can be a costly resource. This analysis demonstrated, in a standout way, that pharmacists greatly contribute to improved outcomes. This data and the ability to obtain some revenue for medication therapy management strengthened our business plan for expansion of services.
>
> Lee Mork, MBA, MS, RPh
> Director of Pharmacy
> Allina Health Group

Allina Health wanted to better understand the impact pharmacists were having on patient outcomes.

MEDICATION THERAPY MANAGEMENT FOR IMPROVING CARE

To better understand the impact of the pharmacist on patient outcomes, Allina Health leveraged the Health Catalyst® Analytics Platform and Health Catalyst professional services to perform a comprehensive analysis.

Using claims and clinical data from the analytics platform, analysts compared outcomes for two groups. Both groups consisted of patients receiving advanced care team services with Group A patients also obtaining MTM, while patients in Group B did not get MTM. Using these criteria, the analysis observed 283 patients in Group A and 566 patients in Group B.

Each group has an index date: Group A is the first MTM encounter date and Group B is the advanced care team enrollment date. This enables analysts to evaluate, by patient, the total cost of care in the six-month period prior to the index date against the total cost of care in the six-month period after that date.

Analysts used the Centers for Medicare and Medicaid (CMS) rolling 12-month hierarchical condition category (HCC) score at the time of the index date to group the patients into six risk different groups (zero-five). The risk score distribution helped demonstrate that the patient populations for Group A and Group B were comparable enough to be evaluated against each other. The risk groups included:

- Risk group zero = patients with a CMS HCC risk scores 0-0.99.

- Risk group 1 = patients with a CMS HCC risk score 1-1.99.

- Risk group 2 = patients with a CMS HCC risk score 2-2.99.

- Risk group 3 = patients with a CMS HCC risk score 3-3.99.

- Risk group 4 = patients with a CMS HCC risk score 4-4.99.

- Risk group 5 included all patients with a score ≥5.

Analysts then evaluated the pharmacist MTM impact on all MTM and advanced care team patients. The analysis included:

- Risk distribution.

- Drug count and variation.

> This initiative solidified and substantiated the role of the pharmacist within the advanced care team and the importance of pharmacist interaction with patients.
>
> Lee Mork, MBA, MS, RPh
> Director of Pharmacy
> Allina Health Group

- Impact on total cost of care.
- Impact on admissions.
- Impact on emergency department visits.

RESULTS

The analysis, using Allina Health's specific data and patient population, demonstrated the unique, positive impact pharmacist MTM is making on patient outcomes in the six-month period following the pharmacist MTM. This program is effectively reducing the total cost of care.

Results include:

- $2,085 mean total cost of care reduction per patient in the six-month period after the first pharmacist MTM encounter; over $590,000 extrapolated out over 283 MTM patients.
  - Of those 283 MTM patients, 183 had a hospitalization just prior to the index date. They had an even greater reduction in average total cost of care per patient of $4,215 more than the patients who did not receive MTM.

- 12 percentage point reduction in hospital admissions per 1,000 members.

- 10 percentage point reduction in ED visits per 1,000 members.

- Reductions in average medication count:
  - Statistically significant decreases in average medication count occurred among patients in risk groups two and three—and the coefficient of variation was reduced for risk group three (see Figures 1 and 2).
    - For patients in risk group two, the average medication count decreased by three (17 percent).
    - For patients in risk group three, the average medication count decreased by four (25 percent), and the coefficient of variation was nearly cut in half.
      - Coefficient of variation is a measure of variation in drug counts across the patients in each group calculated as (average drug count/standard deviation).
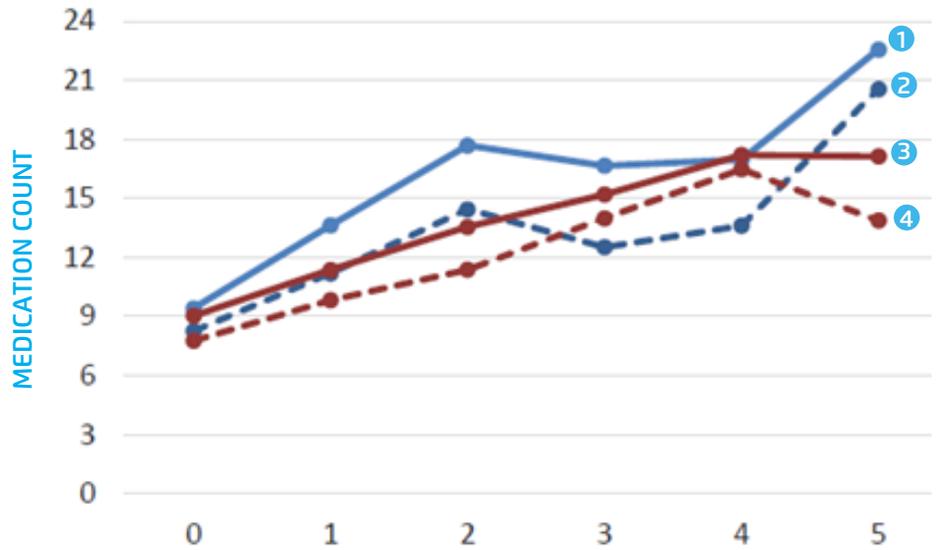
FIGURE 1. AVERAGE MEDICATION COUNTS PER MEMBER BY RISK GROUP

Group A: patients enrolled in advanced care team <u>and</u> MTM.

① ——●—— Group A Before

② ——●—— Group A After

Group B: patients enrolled in advanced care team <u>not</u> in MTM.

③ ——●—— Group B Before

④ ——●—— Group B After

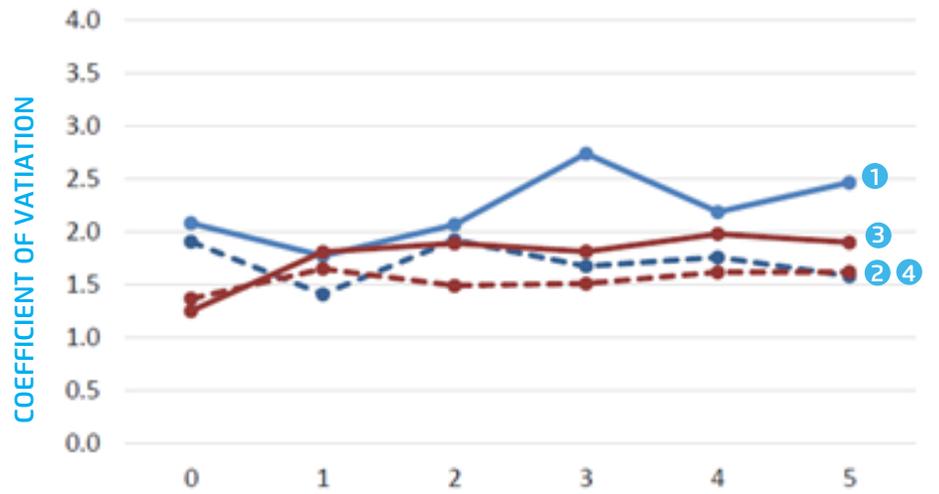*Figure 1: Average medication counts per member by risk group*

FIGURE 2. COEFFICIENT OF VARIATION BY RISK GROUP

Group A: patients enrolled in advanced care team <u>and</u> MTM.

① ——●—— Group A Before

② ——●—— Group A After

Group B: patients enrolled in advanced care team <u>not</u> in MTM.

③ ——●—— Group B Before

④ ——●—— Group B After

Figure 2: Coefficient of variation by risk group

MTM pharmacists have also decreased the pill burden for patients. In one case, a pharmacist recently worked with a patient who had been struggling to take their medications correctly. The pharmacist identified that it worked best for this patient to take his medications when his wife was present.

Without someone else present when he took his medications, he would sometimes forget if he had taken the medication or not and would then either take too much or too little, of the prescribed medication. The pharmacist was able to change the patient from an immediate release medication prescribed three times per day to an extended release medication taken once daily. While this did not reduce the drug count, it reduced the pill burden for the patient and improved his adherence.

Pharmacy leaders integrated the data demonstrating the unique, positive impact of pharmacists on patient outcomes at Allina Health into the business plan for pharmacist MTM services, gaining organizational commitment to extend pharmacist MTM services to a new patient population.

WHAT'S NEXT

Allina Health will continue to use data and analytics to evaluate the impact of pharmacist MTM on patient outcomes. Next, it plans to evaluate the impact of pharmacist MTM on clinical conditions affected by drug therapy, such as pharmacist driven changes to blood pressure drug therapy and the long-term impact on blood pressure control. ⑂

REFERENCES

1. Centers for Disease Control and Prevention. (2017). *Therapeutic drug use.* Retrieved from https://www.cdc.gov/nchs/fastats/drug-use-therapeutic.htm

2. Centers for Disease Control and Preventions. (2018). *Adverse drug events in adults.* Retrieved from https://www.cdc.gov/medicationsafety/adult_adverse drugevents.html

ABOUT HEALTH CATALYST

Health Catalyst is a next-generation data, analytics, and decision support company committed to being a catalyst for massive, sustained improvements in healthcare outcomes. We are the leaders in a new era of advanced predictive analytics for population health and value-based care with a suite of machine learning-driven solutions, decades of outcomes-improvement expertise, and an unparalleled ability to integrate data from across the healthcare ecosystem. Our Health Catalyst Data Operating System (DOS™), a next-generation data warehouse and application development platform—powered by data from more than 100 million patients, encompassing over 1 trillion facts —helps improve quality, add efficiency and lower costs for organizations ranging from the largest US health system to forward-thinking physician practices. Our technology and professional services can help you keep patients engaged and healthy in their homes, communities, and workplaces, and we can help you optimize care delivery to those patients when it becomes necessary. We are grateful to be recognized by Fortune, Gallup, Glassdoor, Modern Healthcare and a host of others as a Best Place to Work in technology and healthcare.

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